The decline of EMU core countries' portfolio equity investments in the Euro area: the role of stock return correlations

The decline of EMU core countries' portfolio equity investments in the Euro area: the role of stock return correlations

Maela Giofré
University of Turin

First draft: March 2020. This version: March 2021

Abstract

While the enlargement of the Euro area to new countries has reduced the average return correlation among member countries, the financial crisis and the sovereign debt crisis have led to an increase in stock return correlation among old members. We find that EMU core countries portfolio allocation has been significantly driven by diversification motives: they have reduced their portfolio equity investment in assets issued by member countries featuring a stronger returns' correlation with domestic assets. This evidence sheds light on the determinants of the sharp decline in bilateral equity investments in the Euro area after 2007, and points to the importance of diversification benefits.

JEL classification: F21, F30, F36, G11, G15

Keywords: stock market integration; common currency; Euro area; foreign portfolio investment

1 Introduction

After the inception of the European Economic and Monetary Union (EMU) two decades ago, the literature unequivocally maintained the tendency of the Eurozone countries to disproportionately invest in their partners' assets, both in bonds (Lane (2006), Giofré (2013)), and in equities (Lane and Milesi-Ferretti (2007), Balta and Delgado (2009), Berkel (2004), Slavov (2009)). Sousa and Lochard (2011) and Allen and Song (2005) confirm a similar evidence for cross-border direct investments and cross-border merger and acquisition activities.

However, within the general downfall of international financial flows after the financial crisis (Lane (2013), Milesi-Ferretti and Tille (2011)), bilateral cross-border portfolio equity holdings within the EMU area experienced an even more abrupt and persistent fall. This peculiar evidence occurred in conjunction with a combination of outstanding events, such as the enlargement process, on the one hand, and the financial crisis, then turned into the sovereign debt crisis, on the other hand.

Giofré and Sokolenko (2020) highlight that the crisis has drastically weakened the linkages among original members: a peculiar decline in economic development and, more importantly, a deterioration of the control of corruption standards of Euro periphery countries, those more severely injured in the sovereign debt crisis, induced a sharp decrease of their inward investments by the Euro area as a whole.

In this paper, we investigate on the role played by diversification opportunities. Vermeulen (2013) finds a significant negative relationship between foreign equity holdings and stock market correlations during the financial crisis, while there is no relationship before the crisis. We find, relatively to the Euro area, that the increase in stock return correlation induced by the global crisis has played a significant role in explaining the change in the investment pattern of core countries in EMU members' assets after 2007: an increase in return correlations implies lower diversification opportunities and could be reflected in lower investments. We highlight that core countries reduced equity investment in foreign core and periphery economies after the crisis, but the decrease has been significantly larger in those EMU economies' assets highly correlated with domestic assets.

This paper contributes to the literature about the time-varying common currency effect on bilat-

eral portfolio investments, by adding the diversification motive to the drivers of the decline of the within EMU investment after 2007, and complementing the explanation based on the corruption and size factors, already highlighted in the literature.

The remainder of the paper is structured as follows. In Section 2, we sketch the estimable equation. In Section 3 we describe the data and discuss some descriptive statistics. In Section 4, we perform the empirical analysis. Section 5 summarizes and concludes.

2 Estimable equation

Our baseline estimation builds on the following specification:[1]

$$\begin{aligned} \log(FPE_{sh}) &= \alpha + \sum_{j=1,..,J} \beta^j X_h^j + \sum_{k=1,..,K} \varphi^k Y_s^k + \sum_{l=1,..,L} \delta^l Z_{sh}^l + \\ &\sum_{m=1,..,M} \theta^m \log(Q_h^m) + \sum_{n=1,..,N} \rho^n \log(T_s^n) + \sum_{p=1,..,P} \sigma^p \log(W_{sh}^p) + \gamma D + \varepsilon_{sh} \end{aligned} \tag{1}$$

The dependent variable $\log(FPE_{sh})$, is the logarithm of the foreign portfolio equities (FPE) of source country s in host country h.

Our regression specification accounts for pair-specific regressors (Z_{sh} or W_{sh}), such as the returns' correlation or gravity variables, country-specific variables (X_h, Y_s, Q_h, T_s), such as size and institutional variables, and time factors (D).

Among these covariates, continuous regressors (Q_h, T_s and W_{sh}) are expressed in logarithmic terms, so that their coefficients, being the dependent variable also defined in logs, can be easily interpreted in elasticity terms (e.g., if a significant coefficient is equal to 0.3, then a 10% increase in the regressor induces a 3% increase in the dependent variable). Conversely, the effect of a dichotomous variable (X_h, Y_s and Z_{sh}) on a dependent variable expressed in logs is captured by the following transformation of its coefficients β: $e^{\beta} - 1$ (e.g., if a significant coefficient β is equal to 0.3, then the effect of a dummy equal to 1 on the dependent variable is $e^{0.3} - 1 = 0.35$, to be interpreted as the

[1] Our data are time varying, but for the sake of simplicity in notation, we drop the time index in the equations.

effect being 35% larger than the effect of a dummy equal to 0).[2]

Among these variables, the dummies capturing the EMU country membership are crucial for our analysis. EMU_{sh} is a bilateral-specific dummy variable taking value 1 when both the source country s and the host country h are EMU members, and 0 otherwise; EMU_s (or EMU_h) is instead a country-specific dummy variable equal to 1 when the source country (or host country) is a EMU member, and 0 otherwise.

Finally, D is a dummy capturing the time dimension, such as pre- or post-crisis period, which allows us to detect any global shift in foreign investment due to macroeconomic shocks.

To investigate the dynamics of integration of the bilateral FPE in the euro area, the econometric specification (1) is enriched to include interactions of the EMU dummies with other factors (A), so as to seize the eventual incremental or erosive role played by these factors, such as the crisis, on the EMU linkages.[3]

$$\log(FPE_{sh}) = \alpha + \beta EMU_* + \gamma A + \delta EMU_* \cdot A + controls + \varepsilon_{sh} \tag{2}$$

Through a Difference-in-Difference approach, we aim at seizing how a factor A affects the FPE among EMU countries, on top of the global effect played by A on FPE.

The econometric strategy adopted follows Santos Silva and Tenreyro (2006) who explicitly address, within the standard trade log gravity models, the problem of inflation of zero investment data and the need to get estimates robust to different patterns of heteroskedasticity**.** Accordingly, we model the dependent variable FPE_{sh} as following a Poisson distribution, applying the Poisson Pseudo-Maximum Likelihood estimator, with year dummy, individual fixed effect –that in our case corresponds to country-pair fixed effects– and with standard errors adjusted for two-way clustering at the investing-destination country pair and year levels.

[2] Note that if the coefficient is null (or non statistically significant) then $e^0 - 1 = 0$, i.e., the effect of a dummy equal to 1 is not different from the effect of a dummy equal to 0.

[3] The subscript "$*$" indicates sh, s or h, when the EMU dummy is, respectively, bilateral, source country-specific or host country-specific.

3 Data and descriptive statistics

3.1 Data

We consider the bilateral equity portfolio investments of 68 countries, for the period 2001-2017.[4] We adopt the Coordinated Portfolio Investment Survey (CPIS), released by the IMF, a dataset which has been used in many recent papers (Fidora et al. (2007); Lane and Milesi-Ferretti (2007); Sorensen et al. (2007); Giannetti and Koskinen (2010); Giofré (2013)). This survey collects security-level data from the major custodians and large end-investors. Portfolio investment is broken down by instrument (equity or debt) and residence of issuer, the latter providing information on the destination of portfolio investment.[5] The CPIS is however unable to address the issue of third-country holdings and round-tripping, very frequent in the case of financial offshore centers. Following the more recent literature on offshore center classifications, we exclude from our sample "the eight major pass-through economies— the Netherlands, Luxembourg, Hong Kong SAR, the British Virgin Islands, Bermuda, the Cayman Islands, Ireland, and Singapore— *[hosting]* more than 85 percent of the world's investment in special purpose entities, which are often set up for tax reasons" (Damgaard et al. (2018)).[6]

Details on the definition of the dependent variable and regressors, and information on their respective sources are reported in Appendix A.

3.2 Descriptive statistics

Table 1 reports the variables included in our analysis and their main descriptive statistics. The subscript sh refers to the country-pair, and $*$ indicates that the corresponding variable enters the analysis for both the destination and the investing country.

[Table 1]

[4] See Appendix A for the full list of investing and destination countries.

[5] While the CPIS provides the most comprehensive survey of international portfolio investment holdings, it is still subject to a number of important caveats. See data.imf.org/cpis, for more details on the survey.

[6] In Table 7, we consider alternative classifications of offshore centers.

The first panel reports data on the dependent variable, i.e., the bilateral portfolio equities holdings expressed in US$. They range from 0 to 1295 billions of US$, with a median of 8.10 millions and a standard deviation of 29 billions.

The second panel refers to the main regressor, that is the bilateral stock returns' correlation variable, with a mean equal to 0.34, a median of 0.37 and a standard deviation equal to 0.62.

The third panel comprises all other regressors, and is further split into sub-groups. The size variables considered are the GDP per capita and the GDP in US$. The GDP per capita of source and host countries shows a large dispersion among countries: the GDP per capita mean is 24327 US$, while 50% of the sample has a GDP per capita lower than 16681 US$. The minimum value is equal to 447 US$, while the maximum is 119225 US$, with a standard deviation of 21977 US$. A notable degree dispersion is also present in the GDP in US$ variable.

With the only exception of the distance variable, the bilateral gravity variables are binary covariates, expressing whether or not country pairs share a border, colonial linkages, a common language, or legal origins.

The capital mobility variable ranges from 0 to 10, to indicate increasing levels of capital mobility: its mean is equal to 4.48, the first quartile is equal to 1.54, while the third quartile is equal to 6.92. Finally, the institutional variables refer to the control of corruption, and are drawn from the Worldwide Governance Indicators (WGI, World Bank) and from Transparency International.[7] These variables' index goes from 0 to 100, reflecting increasing country governance standards. For instance, the mean for the "control of corruption" index (WGI) is around 68.74, with 25% of countries reporting a result lower than 51.38, and another 25% of countries featuring an index above 91.20, with a standard deviation equal to 25.40.

[7] These indexes are described in Appendix A.

4 Empirical analysis

4.1 Previous findings

4.1.1 The dynamics of FPE and EMU linkages

In Figure 1, we report the dynamics of bilateral foreign portfolio equities (FPE), as in Giofré and Sokolenko (2020) Panel a) reports the trend of bilateral foreign investment over years for all countries in the sample: after normalizing to 1 its average value in 2001, the figure displays an increasing pattern of FPE in the world until 2007, a drop in 2008 and then a recovery up to a level more than 3 times larger than its initial level. The drop in this figure reflects, for equity holdings, the abrupt fall in financial flows due to the financial crisis recorded by the literature (Lane (2013); Milesi-Ferretti and Tille (2011)).

In panel b), FPE are regressed on the bilateral EMU_{sh} dummy, year dummies D, and their interaction $EMU_{sh} \cdot D$, to seize the change in the impact of the EMU_{sh} dummy on FPE over time. Normalizing to 1 the effect of the common currency in 2001, this figure displays the trend of the EMU effect on bilateral portfolio foreign investments. We can observe, first, that there has been a decreasing EMU effect from 2007 onward; then, there has been no recovery, but rather a slow decline down to 40 percent of its initial level, differently from panel a).

[Figure 1]

This suggests that Euro area specific dynamics can be responsible of the persistence in the decline of FPE among member countries. To properly address this issue, we analyze below the EMU effect in a multivariate regression, properly accounting for the heterogeneity within the EMU group.

Table 2 replicates, as a benchmark, the results in Giofré and Sokolenko (2020) about the effect of the bilateral EMU dummy, EMU_{sh}, on bilateral foreign portfolio equity holdings, just considering the dummy Period 2 (2007-2017), rather than splitting it into crisis and post-crisis dummy. The dependent variable is the log of bilateral foreign equity investment (FPE). Regressors are reported at the head of the rows. As specified above, the coefficients of all regressors expressed in logs can

be interpreted in elasticity terms, while the effect of dummy variables on the dependent variable is captured by the coefficient β as follows: $e^{\beta} - 1$.

In column 1, we include standard gravity variables, used in literature to define the cultural and geographic proximity between two countries for equity flows (Portes and Rey (2005); Portes et al. (2001)), and equity holdings (Chan et al. (2005)). In our case, we include, among the gravity variables, the distance between the capital cities of country s and country h, the border dummy (equal to 1 for each country pair sharing a common border, 0 otherwise), the language dummy (equal to 1 when the country s and the country h share the same language, 0 otherwise), the colonial dummy (equal to 1 for those pairs of countries sharing a common colonial past, 0 otherwise), and the legal origin dummy variable (equal to 1 when investor and destination countries have a common legal origin, 0 otherwise). We expect geographical and cultural proximity to have a positive impact on foreign portfolio equities, as a decrease in physical and cultural distance reduces information costs, and then enhances investment by foreign investors.

Consistently with the gravity model approach, we also include the size variables, that express the economic weight of the investing and host countries, such as market capitalization and GDP per capita, and finally we control for capital mobility.

[Table 2]

The results, as predicted, show that the gravity variables have a strong impact on the FPE allocation. The distance variable displays a negative coefficient (-0.069), meaning that an increase in distance between capital cities is associated with a decrease in foreign portfolio equities. Sharing a common border leads to an increase of FPE by 49% ($e^{0.401} - 1 = 0.49$), having an official language in common increases FPE by 84%, having a common colonial past increases equities share by 4.1 times, while the common legal origin seems to have no impact. The contribution of the size variables also appears important. Stock market capitalization has a significant and positive impact on the FPE, which appears to be stronger for the host (0.783) than for the source country (0.567). The opposite happens to the GDP per capita variable: an increase in the source country's GDP strongly fosters

foreign investment, with a non significant effect for the host countries. Capital mobility variables plays a positive significant role on the investing size, and a modest negative impact on the host side.

The coefficient of the bilateral EMU dummy variable over the whole period is equal to 0.562, that is EMU countries invest one another 75% more than other country-pairs.

In column (2) of Table 2, we try to capture the time variation of the EMU dummy, by including a dummy for the period going from 2007 to 2017 (Period 2), that is, the declining period observed in panel (b) of Figure 1. The coefficient of the Period 2 dummy (-0.299) captures the general fall (-26%) of bilateral FPE for non-EMU country pairs. We observe that the coefficient of the EMU_{sh} dummy, referred to the excluded time span, i.e., the pre-financial crisis period, is large, positive and statistically significant: EMU members used to invest one another 108% more than non-EMU country pairs in the pre-crisis period. The effect of the EMU dummy in the subsequent period is computed by adding up the coefficient of the corresponding interaction term ($EMU_{sh} \cdot Period2$) to the non-interacted one (EMU_{sh}).

The negative coefficient of the interaction term $EMU_{sh} \cdot Period2$ can be interpreted as the change of the EMU effect (on FPE) induced by the crisis (or, symmetrically, as the change of the crisis effect on FPE for EMU country pairs). It is negative and significant, thus suggesting a significant drop from 108% ($= e^{0.733} - 1$) to 67% ($= e^{0.733-0.220} - 1$) in the EMU effect on FPE, relatively to the pre-crisis period (or, symmetrically, a more negative effect of the crisis for EMU country pairs).

The results in Table 2 confirm, in a multivariate setting, the preliminary evidence above: after 2007, the common currency effect on bilateral FPE has significantly fallen, and therefore the linkages among EMU countries have significantly loosened. The results are quite similar, when restricting to the sample of OLD EMU members, either on the investing side ((2a) and (2b)), or on the destination side ((3a) and (3b)), or on both ((4a) and (4b)). As emphasized by Giofré and Sokolenko (2020), this points to a slackening of the linkages among the original members because of the crisis, more than to the inclusion of new countries less connected with the euro area.

Indeed, it is impossible to assess the enlargement effect by investigating the investment dynamics (pre- and post-crisis) of NEW EMU countries as a separate group, as they started entering the EMU

group only since 2007 onwards, as shown in Figure 1. Giofré and Sokolenko (2020) try to seize the enlargement effect just indirectly, by observing the investment patterns over time of OLD EMU, and of the whole EMU group, made up of OLD EMU only until 2007, but including also NEW EMU thereafter, as far as they gradually enter the common currency area. By comparing these two patterns, they indirectly infer a predominant role of the crisis over the enlargement.

4.1.2 OLD EMU group decomposition

In Table 3, following Lane and Milesi-Ferretti (2017), among others, we distinguish within the OLD EMU group, the "Euro core" countries (Austria, Belgium, Finland, France, Germany, Luxembourg, and the Netherlands) and the "Euro periphery" or "Euro crisis" countries (Greece, Ireland, Italy, Portugal, and Spain), and investigate their investment patterns.

[Table 3]

In column (1a) and (1b) of Table 3, we observe that bilateral FPE among Euro core countries suffered for the crisis, starting from 93% to 64% larger reciprocal investment. When considering, instead, the cross investment of Euro core countries in Euro periphery countries (columns (2a) and (2b)), we observe a clear picture of the collapse of the EMU linkages: on the whole period, their investments are 28% larger than other countries, starting from 94% larger in the pre-crisis period, to only 11% larger investment after the crisis.

When considering the investments of Euro periphery source countries, we observe that their investment in Euro core countries ((3a) and (3b)) are on average 51% larger than other country pairs, while their investment in periphery economies are 102% larger than other country pairs, but there is no substantial difference between the pre-crisis.and the subsequent period.

These results solicit a specific deeper investigation of the drivers of the fall in investment by core countries in other OLD countries' assets.

In particular, we test how far the investment diversion out of the Euro area is attributable to the pursuit of diversification benefits, that might have foregone within the area, as a consequence of the stronger correlation induced by the global and sovereign debt crisis.

4.2 Main findings

4.2.1 The role of returns' correlation

In Figure 2, we report the dynamics of the bilateral correlation of monthly returns in the previous year, after normalizing to 1 its 2001 value. Panel a) shows the dynamics of the worldwide stock correlation, with a not clear-cut behavior. The returns' correlation in the EMU group (panel b)), shows instead a slightly decreasing pattern. This trend appears however related to the enlargement of the Euro area, since, when restricting to the OLD EMU sample, we observe an increasing trend, which appears particularly pronounced for the core countries, as evident from the scale of the y-axis scale.

[Figure 2]

[Table 4]

Table 4 confirms what shown in Figure 2 within a regression setting, whose dependent variable is the one-year lagged correlation of monthly returns. The results in the first column shows an increase in stock correlation worldwide in the second period, while it declines for the whole EMU group. However, when focusing on OLD EMU countries, this correlation significantly increases after the crisis, thus confirming that the decreasing trend for the whole EMU group is attributable to the entrance of new members featuring less correlated stock markets.

In Table 5, we include the correlation variable in the multivariate analysis, in order to detect whether it can help explain the evidence of the fall of core countries' investment in OLD EMU assets, shown in Table 3.

In particular, we interact our EMU dummies with the returns' correlation variable, to assess how foreign portfolio investments in the Euro respond to diversification benefits.

In order to enhance the interpretability of the results, we include, rather than the continuous correlation variable, a dichotomic one, $H\ correl_{s,h}$, equal to 1 if the correlation of the stock returns between country s and h is larger than the mean, and 0 otherwise. Columns (#a) add to the specification in Table 2 and 3, the correlation binary variable, while columns (#b) also include the

interaction between the this variable and the corresponding EMU dummy. The coefficient of the binary variable $H\ correl_{s,h}$ in columns (#a) is non significant. This finding is consistent with the literature which highlights a non systematic role of stock returns' correlation in explaining foreign portfolio equities for Euro area investors, in the first decade of the EMU (Lane and Milesi-Ferretti (2007)). However, the results in columns (#b) show that a systematic diversification motive of Euro area investors emerges after 2007, when the returns' correlation among member countries gets stronger.

[Table 5]

We observe indeed that in the second period (column (1b)), the linkages among EMU members are even tightened, from 106% ($e^{0.724}-1$) to 213% ($e^{0.727+0.417}-1$), but only for those country pairs with weakly correlated stock returns ($H\ correl_{s,h}=0$), while the investments are hardly undercut, down to 62% ($e^{0.727+0.417-0.66\backslash}-1$), for those country pairs whose stock returns are highly correlated ($H\ correl_{s,h}=1$).

It is evident that this effect about the EMU group is led by the OLD EMU dynamics, and more specifically by the core countries dynamics. Indeed, the negative impact of the correlation variable in the second period is larger for the OLD EMU sub-group than for the whole EMU group, and even larger for the CORE sub-sub-group. In particular, the linkages among core countries fall from 91% to 57% in the second period, but only for highly correlated country pairs, while the weakly correlated country pairs witness an even stronger reciprocal attractiveness. The underweighting of highly correlated assets is particularly dramatic when considering the investment of core countries in periphery countries: a strong and remarkable attractiveness before the crisis (92%), turns into a negative effect (-28%), denoting that the investment of core countries in periphery countries has become significantly lower than other country pairs' bilateral investment. This latter finding is consistent with the results in Giofré and Sokolenko (2020),who identify the core-periphery linkages as the ones that have experienced the harshest deterioration after the crisis.

4.2.2 Robustness

To provide consistency to our findings, in Table 6 and 7, we undergo our main results to robustness checks.

[Table 6]

In Table 6, we test the sensitivity of our analysis by re-defining our main regressor, that is the dichotomic high return correlation variable, $H\ correl_{s,h}$, relative to the median, rather to the mean, and the results are left substantially unchanged.

In Table 7, we consider alternative definitions of the offshore centers. In columns (#a), we follow a classification, which, among EMU countries, excludes the Netherlands from the offshore list, but adds Cyprus, Latvia and Malta (Zoromé (2007)). In columns (#b), we extend the list of offshore centers to other EMU countries, such as Cyprus, Malta and Belgium, following the classification in Lane and Milesi-Ferretti (2017).[8]

We find that, under alternative definitions of offshore centers, the results, though marginally different in size, confirm the baseline specification's ones.

[Table 7]

4.2.3 Returns' correlation, size and institutions

Finally, we try to reconcile our results with the previous findings in the literature, which highlighted the role of economic development and country governance factors as potential causes behind the fall in bilateral investments in the Euro area. Giofré and Sokolenko (2020) find that the worsening of the economic condition of EMU countries and the weakened control of corruption mechanisms in peripheral countries, likely due to the effects of the crisis, have triggered a decline in bilateral FPE among EMU countries.

[8] For a detailed list of offshore centers in the different specifications, see Appendix A.

In Table 8, we therefore check whether the change in the economic size and country governance of EMU countries can be fruitfully combined with our high correlation variable, to explain the decline in bilateral FPE among EMU countries.

[Table 8]

The first index considered (columns (1a) and (1b)) is the "Control of Corruption" drawn from Worldwide Governance Indicators (WGI, Source: World Bank), and captures the perceptions of the extent to which public power is exercised for private gain. As an alternative, in columns (2a) and (2b), we consider the "Perceived Control of Corruption index" (Source: Transparency International), which captures the perceived level of corruption in the public sector, relying on different country sources. As far as the size indicators are concerned, we consider the GDP per capital, as a proxy of the standard of living, and the GDP in US$, as a standard size measure.

Since in Giofré and Sokolenko (2020) the high size and high control of corruption indexes are defined relative to their time-varying median, for the ease of comparability, the high returns' correlation binary variable is also defined relative to the median (as in Table 6).

Let's focus on columns (#b), reporting all interactions. Column (1b) shows that EMU investments in destination countries which display above the median values of control of corruption are significantly larger (from 58% to 200%), but this larger effect is significantly dampened by a high returns' correlation with domestic assets (174%). The same evidence emerges when considering the alternative definition of perceived corruption (column (2b)), GDP per capita, or nominal GDP (columns (3b) and (4b)).

[Table 9]

[Table 10]

We replicate the analysis of Table 8 for OLD EMU (Table 9) and core countries (Table 10). In Table 9, the results found in Giofré and Sokolenko (2020) are confirmed, while the evidence of the diversification motive is weaker. However, when focusing on core countries in Table 10, the results are significant again, thus revealing that the non significant interaction coefficients for OLD EMU in

Table 9 are due to periphery investing countries. Indeed, in Table 10, core countries confirm to be driven by diversification motives, on top of other concurrent factors, when choosing their portfolio allocation in Euro area assets: a higher returns' correlation, inevitably produced by the persistent crisis, has reduced the diversification opportunities of core countries, thus contributing to the general shrunk in bilateral portfolio investment among Euro area members.

5 Conclusions

This paper focuses on the contraction of core EMU countries' investments in the Euro area. We find that the increase in stock return correlation induced by the global crisis has played a significant role in explaining the change in the investment pattern of core countries towards other EMU members after 2007. An increase in return correlations implies lower diversification opportunities and could be reflected in lower investments. We find indeed that core countries reduced equity investment in core and periphery economies after the crisis, and that the decrease is significantly larger in those economies' assets highly correlated with domestic assets.

This paper adds the diversification motive to the drivers of the reduction of the within EMU investment after 2007, and complements and further corroborates the explanation based on the corruption and size factors, already highlighted in the literature. Indeed, core countries' investors confirm to underweight assets issued by countries with poor control of corruption, as already shown in previous work, but, as a novel finding, we highlight that this effect appears particularly harsh for assets highly correlated with the domestic ones.

References

Allen, F. and W. Song (2005). Financial integration and EMU. *European Financial Management 11(1)*, 7–24.

Balta, N. and J. Delgado (2009). Home bias and market integration in the EU. *CESifo Economic Studies 55*, 110–144.

Berkel, B. (2004). Institutional determinants of international equity portfolios- a country-level analysis. *EFA 2004 Maastricht Meetings Paper No. 2899*.

Chan, K., V. Covrig, and L. Ng (2005). What determines the domestic bias and foreign bias? Evidence from mutual fund equity allocations worldwide. *Journal of Finance 60*, 1495–1534.

Damgaard, J., T. Elkjaer, and N. Johannesen (2018). Piercing the veil. *International Monetary Fund: Finance and Development Quarterly 55(2)*, 50–53.

Fidora, M., M. Fratzscher, and C. Thimann (2007). Home bias in global bond and equity markets: The role of real exchange rate volatility. *Journal of International Money and Finance 26*, 631–655.

Giannetti, M. and Y. Koskinen (2010). Investor protection, equity returns and financial globalization. *Journal of Financial and Quantitative Analysis 45*, 135–168.

Giofré, M. (2013). Investor protection rights and foreign investment. *Journal of Comparative Economics 41*, 506–526.

Giofré, M. and O. Sokolenko (2020). The shrinkage after the enlargement? the effect of financial crises and enlargement on stock market integration in the euro area. *SSRN Working Paper 3542470*.

Lane, P. (2006). Global bond portfolios and EMU. *International Journal of Central Banking 2*, 1–23.

Lane, P. (2013). Capital flows in the euro area. *European Commission, Economic Papers 497*.

Lane, P. and G. Milesi-Ferretti (2007). The international equity holdings of euro area investors. *in The Importance of the External Dimension for the Euro Area: Trade, Capital Flows, and International Macroeconomic Linkages (Robert Anderton and Filippo di Mauro, eds), Cambridge University Press*.

Lane, P. and G. Milesi-Ferretti (2017). International financial integration in the aftermath of the global financial crisis. *IMF Working Papers 17/115*.

Milesi-Ferretti, G. and C. Tille (2011). The great retrenchment: international capital flows during the global financial crisis. *Economic Policy 26*, 289–346.

Portes, R. and H. Rey (2005). The determinants of cross-border equity flows. *Journal of International Economics 65*, 269–296.

Portes, R., H. Rey, and Y. Oh (2001). Information and capital flows: The determinants of transactions in financial assets. *European Economic Review 45*, 783–796.

Santos Silva, J. and S. Tenreyro (2006). The log of gravity. *The Review of Economics and Statistics 88(4)*, 641–58.

Slavov, S. (2009). Do common currencies facilitate the net flow of capital among countries? *The North American Journal of Economics and Finance 20(2)*, 124–144.

Sorensen, B. E., Y. Wu, O. Yosha, and Y. Zhu (2007). Home bias and international risk sharing: Twin puzzles separated at birth. *Journal of International Money and Finance 26*, 587–605.

Sousa, J. D. and J. Lochard (2011). Does the single currency affect foreign direct investment? *The Scandinavian Journal of Economics 113(3)*, 553–578.

Vermeulen, R. (2013). International diversification during the financial crisis: A blessing for equity investors? *Journal of International Money and Finance 35*, 104–123.

Zoromé, A. (2007). Concept of offshore financial centers: In search of an operational definition. *IMF Working Paper WP/07/87*.

Tables

Table 1. Descriptive statistics

This table reports the descriptive statistics of the dependent variable and the regressors used in the analysis. The subscript sh refers to the country-pair sh,* indicates that the corresponding variable is included in the analysis for both the destination and the investing country.

	Descriptive Statistics						
	Mean	St. dev	1st Qu	Median	3rd Qu	Min	Max
I. Dependent variable							
Equities$_{s,h}$ (US $)	4.18E+09	2.901E+10	0	8.10E+06	3.04E+08	0	1.29E+12
II. Main regressor							
Equity return correlation$_{s,h}$	0.34	0.36	0.10	0.37	0.62	-1	1
III. Other controls							
Gravity variables							
Distance$_{s,h}$ (miles)	7207.36	4735.46	2781.71	7364.45	10159.53	59.62	19772.34
Border dummy$_{s,h}$	0.03	0.17	0	0	0	0	1
Colonial dummy$_{s,h}$	0.05	0.22	0	0	0	0	1
Language dummy$_{s,h}$	0.11	0.31	0	0	0	0	1
Legal origins dummy$_{s,h}$	0.25	0.43	0	0	0	0	1
Capital mobility							
Capital mobility$_*$	4.48	2.82	1.54	4.62	6.92	0.00	10.00
Size variables							
GDP per cap$_*$ (US $)	24327.00	21976.61	7262.00	16681.00	38166.00	447.00	1.19E+05
GDP$_*$ (US $)	8.02E+11	2.07E+12	4.80E+10	2.14E+11	5.54E+11	1.27E+09	1.94E+13
Institutional variables							
Control of Corruption$_*$	68.74	25.40	51.38	72.45	91.20	4.30	100.00
Perceived Control of Corruption$_*$	56.33	21.86	37.00	53.00	75.00	17.00	99.00

Figure 1. Bilateral Foreign Portfolio Equity investment (FPE).

This figure reports the dynamics of the bilateral FPE over time. Panel a) reports the regression coefficients of FPE on year dummy. Panel b) reports the regression coefficients of FPE on the bilateral dummy EMU_{sh} interacted with year dummy. The figure also displays the entrance of new EMU members and the time split into Period 1 and Period 2. The value of the coefficient in 2001 is normalized to 1, so that the other coefficients are defined in relative terms.

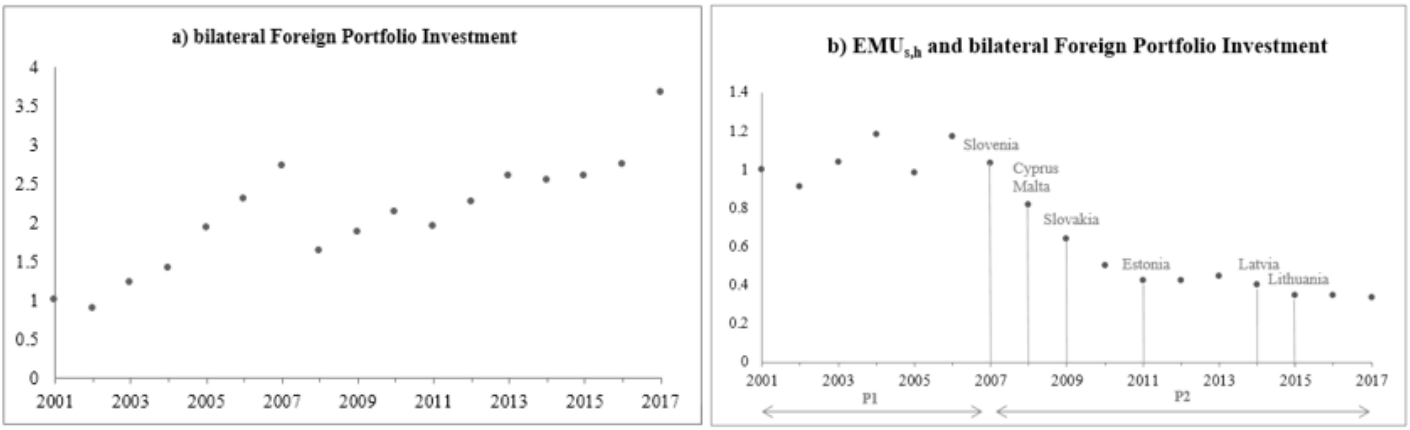

Table 2. FPE and EMU

This table reports the results of a Poisson Pseudo Maximum Likelihood regression (Santos Silva and Tenreyro (2006)), with year dummy, individual country pair fixed-effects and standard errors adjusted for two-way clustering at the investing-destination country pair and year levels. The dependent variable is $\log(FPE_{s,h})$, where the subscript s,h represents the couple investing country s-destination country h. The columns (#a) and (#b) consider specifications, respectively, without and with interactions with the Period 2 dummy. Columns (1a) and (1b) consider the investments among EMU countries, columns (2a) and (2b) consider $OLD\ EMU$ countries investing in EMU host countries, columns (3a) and (3b) consider EMU source countries investing in $OLD\ EMU$ host countries, and columns (4a) and (4b) consider investments among $OLD\ EMU$ countries. ***, **, and * indicate significance at the 1, 5, and 10% levels, respectively.

	Dependent variable: log($FPE_{s,h}$)							
	$EMU_{s,h}$		OLD_sEMU_h		EMU_sOLD_h		$OLD_{s,h}$	
	(1a)	(1b)	(2a)	(2b)	(3a)	(3b)	(4a)	(4b)
log(Distance$_{s,h}$)	-0.069 ***	-0.067 ***	-0.068 ***	-0.067 ***	-0.069 ***	-0.067 ***	-0.068 ***	-0.067 ***
	(0.018)	(0.018)	(0.018)	(0.018)	(0.018)	(0.018)	(0.018)	(0.018)
Border dummy$_{s,h}$	0.401 ***	0.399 ***	0.400 ***	0.398 ***	0.400 ***	0.398 ***	0.399 ***	0.397 ***
	(0.065)	(0.065)	(0.065)	(0.065)	(0.065)	(0.065)	(0.065)	(0.065)
Language dummy$_{s,h}$	0.614 ***	0.608 ***	0.615 ***	0.609 ***	0.615 ***	0.608 ***	0.616 ***	0.610 ***
	(0.059)	(0.059)	(0.059)	(0.059)	(0.059)	(0.059)	(0.059)	(0.059)
Colonial dummy$_{s,h}$	1.630 ***	1.636 ***	1.630 ***	1.635 ***	1.630 ***	1.635 ***	1.629 ***	1.635 ***
	(0.205)	(0.205)	(0.205)	(0.205)	(0.205)	(0.205)	(0.205)	(0.205)
Legal origins dummy$_{s,h}$	-0.084	-0.078	-0.085	-0.079	-0.085	-0.078	-0.086	-0.079
	(0.056)	(0.056)	(0.056)	(0.056)	(0.056)	(0.056)	(0.056)	(0.056)
log(Market cap$_s$)	0.567 ***	0.566 ***	0.566 ***	0.566 ***	0.567 ***	0.566 ***	0.566 ***	0.566 ***
	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)
log(Market cap$_h$)	0.783 ***	0.779 ***	0.782 ***	0.779 ***	0.782 ***	0.779 ***	0.782 ***	0.779 ***
	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)
log(GDP per cap$_s$)	1.484 ***	1.526 ***	1.482 ***	1.523 ***	1.484 ***	1.525 ***	1.482 ***	1.523 ***
	(0.070)	(0.073)	(0.070)	(0.073)	(0.070)	(0.073)	(0.070)	(0.073)
log(GDP per cap$_h$)	0.039	0.066 *	0.039	0.066 *	0.039	0.066 *	0.039	0.066 *
	(0.033)	(0.034)	(0.033)	(0.034)	(0.033)	(0.034)	(0.033)	(0.034)
log(Capital mobility$_s$)	0.134 ***	0.122 ***	0.134 ***	0.122 ***	0.134 ***	0.122 ***	0.134 ***	0.122 ***
	(0.046)	(0.045)	(0.046)	(0.045)	(0.046)	(0.045)	(0.046)	(0.045)
log(Capital mobility$_h$)	-0.056 ***	-0.067 ***	-0.056 ***	-0.067 ***	-0.056 ***	-0.067 ***	-0.056 ***	-0.067 ***
	(0.014)	(0.014)	(0.014)	(0.014)	(0.014)	(0.014)	(0.014)	(0.014)
$EMU_{s,h}$	0.562 ***	0.733 ***						
	(0.049)	(0.062)						
$EMU_{s,h}$ _Period 2		-0.220 ***						
		(0.070)						
OLD_sEMU_h			0.567 ***	0.734 ***				
			(0.049)	(0.062)				
OLD_sEMU_h _Period2				-0.214 ***				
				(0.070)				
EMU_sOLD_h					0.565 ***	0.733 ***		
					(0.049)	(0.062)		
EMU_sOLD_h _Period 2						-0.216 ***		
						(0.070)		
$OLD_{s,h}$							0.570 ***	0.734 ***
							(0.049)	(0.062)
$OLD_{s,h}$ _Period 2								-0.211 ***
								(0.070)
Period 2		-0.299 ***		-0.299 ***		-0.299 ***		-0.299 ***
		(0.077)		(0.077)		(0.077)		(0.077)
Observations	45216	45216	45216	45216	45216	45216	45216	45216
Adjusted R^2	0.714	0.721	0.714	0.720	0.714	0.721	0.714	0.721

Table 3. FPE composition of OLD EMU: CORE and PERIPHERY

This table reports the results of a Poisson Pseudo Maximum Likelihood regression (Santos Silva and Tenreyro (2006)), with year dummy, individual country pair fixed-effects and standard errors adjusted for two-way clustering at the investing-destination country pair and year levels. The dependent variable is $\log(FPE_{s,h})$, where the subscript s,h represents the couple investing country s-destination country h. The columns (#a) and (#b) consider specifications, respectively, without and with interactions with the Period 2 dummy. Columns (1a) and (1b) consider the investments among $CORE$ countries, columns (2a) and (2b) consider $CORE$ countries investing in $PERIPHERY$ host countries, columns (3a) and (3b) consider $PERIPHERY$ source countries investing in $CORE$ host countries, and columns (4a) and (4b) consider investments among $PERIPHERY$ countries. ***, **, and * indicate significance at the 1, 5, and 10% levels, respectively.

	Dependent variable: log($FPE_{s,h}$)							
	$CORE_{s,h}$		$CORE_sPERIPH_h$		$PERIPH_sCORE_h$		$PERIPH_{s,h}$	
	(1a)	(1b)	(2a)	(2b)	(3a)	(3b)	(4a)	(4b)
log(Distance$_{s,h}$)	-0.089 ***	-0.088 ***	-0.102 ***	-0.101 ***	-0.103 ***	-0.102 ***	-0.102 ***	-0.100 ***
	(0.017)	(0.017)	(0.017)	(0.017)	(0.017)	(0.017)	(0.017)	(0.017)
Border dummy$_{s,h}$	0.395 ***	0.393 ***	0.463 ***	0.461 ***	0.451 ***	0.449 ***	0.469 ***	0.468 ***
	(0.067)	(0.067)	(0.067)	(0.067)	(0.067)	(0.067)	(0.068)	(0.067)
Language dummy$_{s,h}$	0.519 ***	0.512 ***	0.530 ***	0.524 ***	0.532 ***	0.527 ***	0.523 ***	0.517 ***
	(0.059)	(0.060)	(0.063)	(0.063)	(0.061)	(0.061)	(0.061)	(0.062)
Colonial dummy$_{s,h}$	1.574 ***	1.580 ***	1.525 ***	1.531 ***	1.527 ***	1.534 ***	1.530 ***	1.537 ***
	(0.205)	(0.204)	(0.206)	(0.206)	(0.205)	(0.205)	(0.205)	(0.205)
Legal origins dummy$_{s,h}$	0.005	0.011	-0.020	-0.014	-0.015	-0.009	-0.015	-0.009
	(0.057)	(0.057)	(0.062)	(0.062)	(0.059)	(0.059)	(0.060)	(0.060)
log(Market cap$_s$)	0.561 ***	0.561 ***	0.557 ***	0.556 ***	0.560 ***	0.559 ***	0.559 ***	0.558 ***
	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)
log(Market cap$_h$)	0.776 ***	0.773 ***	0.771 ***	0.768 ***	0.771 ***	0.768 ***	0.771 ***	0.768 ***
	(0.011)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)
log(GDP per cap$_s$)	1.461 ***	1.501 ***	1.466 ***	1.506 ***	1.487 ***	1.528 ***	1.478 ***	1.519 ***
	(0.069)	(0.072)	(0.069)	(0.072)	(0.070)	(0.073)	(0.070)	(0.073)
log(GDP per cap$_h$)	0.037	0.064 *	0.048	0.074 **	0.043	0.070 **	0.048	0.075 **
	(0.033)	(0.033)	(0.033)	(0.033)	(0.033)	(0.033)	(0.033)	(0.033)
log(Capital mobility$_s$)	0.139 ***	0.126 ***	0.144 ***	0.132 ***	0.140 ***	0.127 ***	0.142 ***	0.129 ***
	(0.046)	(0.045)	(0.046)	(0.045)	(0.046)	(0.045)	(0.046)	(0.045)
log(Capital mobility$_h$)	-0.053 ***	-0.064 ***	-0.057 ***	-0.067 ***	-0.055 ***	-0.066 ***	-0.056 ***	-0.067 ***
	(0.014)	(0.014)	(0.014)	(0.014)	(0.014)	(0.014)	(0.014)	(0.014)
$CORE_{s,h}$	0.536 ***	0.655 ***						
	(0.065)	(0.082)						
$CORE_{s,h}$ _Period 2		-0.158 *						
		(0.096)						
$CORE_sPERIPH_h$			0.247 ***	0.662 ***				
			(0.070)	(0.092)				
$CORE_sPERIPH_h$ _Period2				-0.562 ***				
				(0.108)				
$PERIPH_sCORE_h$					0.409 ***	0.414 ***		
					(0.058)	(0.075)		
$PERIPH_sCORE_h$ _Period 2						0.010		
						(0.095)		
$PERIPH_{s,h}$							0.704 ***	0.612 ***
							(0.132)	(0.167)
$PERIPH_{s,h}$ _Period 2								0.137
								(0.222)
Period 2		-0.308 ***		-0.309 ***		-0.324 ***		-0.324 ***
		(0.075)		(0.075)		(0.075)		(0.075)
Observations	45216	45216	45216	45216	45216	45216	45216	45216
Adjusted R^2	0.714	0.721	0.707	0.713	0.708	0.714	0.707	0.713

Figure 2. Stock returns' correlations

This figure reports the dynamics of the bilateral correlation of monthly returns in the previous year regressed on year dummies (panel a)), or on year dummies and their interaction with the corresponding EMU dummy (panel b) to f)). The value of the coefficient in 2001 is normalized to 1, so that the other coefficients are defined in relative terms.

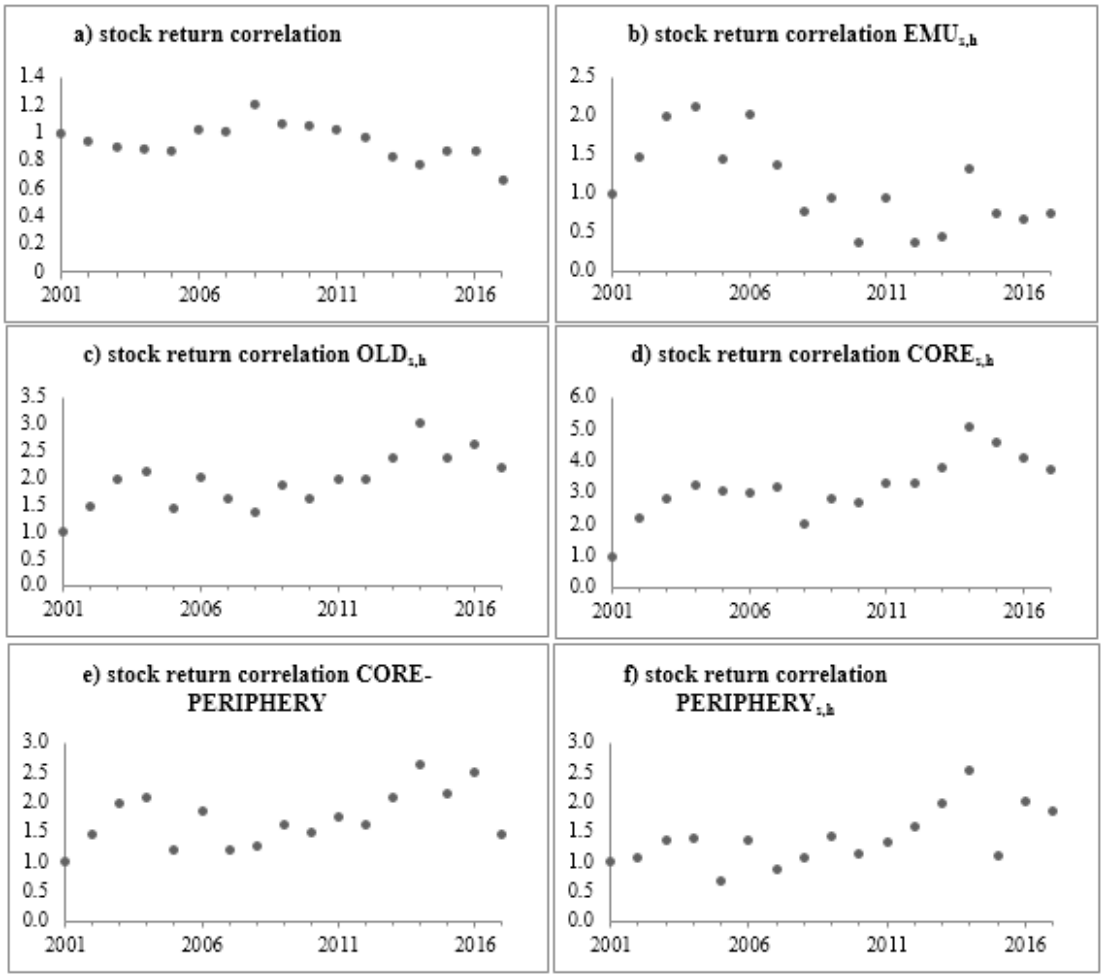

Table 4. Stock returns' correlations and EMU

This table reports the results of a OLS regression of the bilateral correlation of monthly returns in the previous year on different EMU dummies, the Period 2 dummy, and their interactions. The regression specification also includes year dummy, individual country pair fixed-effects and standard errors adjusted for two-way clustering at the investing-destination country pair and year levels. ***, **, and * indicate significance at the 1, 5, and 10% levels, respectively.

	Dependent variable: stock returns' correlation ($correl_{s,h}$)					
	(1)	(2)	(3)	(4)	(5)	(6)
EMU-EMU		0.302 ***				
		(0.010)				
EMU-EMU_Period 2		-0.160 ***				
		(0.013)				
OLD-OLD			0.323 ***			
			(0.019)			
OLD-OLD _Period 2			0.127 ***			
			(0.022)			
CORE-CORE				0.291 ***		
				(0.019)		
CORE-CORE_Period 2				0.044 **		
				(0.022)		
CORE-PERIPHERY					0.267 ***	
					(0.017)	
CORE-PERIPHERY_Period 2					0.091 ***	
					(0.021)	
PERIPHERY-PERIPHERY						0.246 ***
						(0.021)
PERIPHERY-PERIPHERY_Period 2						0.091 ***
						(0.026)
Period 2	0.293 ***	0.301 ***	0.292 ***	0.293 ***	0.293 ***	0.293 ***
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Observations	42728	42728	42728	42728	42728	42728
Adjusted R^2	0.077	0.095	0.093	0.087	0.087	0.082

Table 5. Main findings: FPE and the role of stock returns' correlations

This table reports the results of a Poisson Pseudo Maximum Likelihood regression (Santos Silva and Tenreyro (2006)), with year dummy, individual country pair fixed-effects and standard errors adjusted for two-way clustering at the investing-destination country pair and year levels. The dependent variable is $\log(FPE_{s,h})$, where the subscript s,h represents the couple investing country s-destination country h. The columns (#a) and (#b) consider specifications, respectively, without and with interactions with the High returns' correlation ($H\ correl_{s,h}$) binary variable. Columns (1a) and (1b) consider the investments among EMU countries, columns (2a) and (2b) consider the investments among OLD countries, columns (3a) and (3b) consider the investments among $CORE$ countries, columns (4a) and (4b) consider $CORE$ source countries investing in $PERIPHERY$ host countries. As specified at the bottom of the table, all controls of Table 2 are included, but not reported. ***, **, and * indicate significance at the 1, 5, and 10% levels, respectively.

	Dependent variable: log($FPE_{s,h}$)							
	$EMU_{s,h}$		$OLD_{s,h}$		$CORE_{s,h}$		$CORE_s PERIPH_h$	
	(1a)	(1b)	(4a)	(4b)	(1a)	(1b)	(2a)	(2b)
$EMU_{s,h}$	0.726 ***	0.724 ***						
	(0.062)	(0.062)						
$EMU_{s,h}$ _Period 2	-0.218 ***	0.417 **						
	(0.070)	(0.164)						
$EMU_{s,h}$ _H $correl_{s,h}$ _Period 2		-0.661 ***						
		(0.160)						
$OLD_{s,h}$			0.727 ***	0.725 ***				
			(0.062)	(0.062)				
$OLD_{s,h}$ _Period 2			-0.210 ***	0.635 ***				
			(0.071)	(0.132)				
$OLD_{s,h}$ _H $correl_{s,h}$ _Period 2				-0.875 ***				
				(0.127)				
$CORE_{s,h}$					0.649 ***	0.649 ***		
					(0.081)	(0.082)		
$CORE_{s,h}$ _Period 2					-0.156	0.836 ***		
					(0.096)	(0.132)		
$CORE_{s,h}$ _H $correl_{s,h}$ _Period 2						-1.035 ***		
						(0.127)		
$CORE_s PERIPH_h$							0.654 ***	0.654 ***
							(0.092)	(0.092)
$CORE_s PERIPH_h$ _Period2							-0.560 ***	0.378
							(0.108)	(0.309)
$CORE_s PERIPH_h$ _H $correl_{s,h}$ _Period 2								-0.981 ***
								(0.305)
H $correl_{s,h}$	0.052	0.078	0.050	0.080	0.070	0.095	0.077	0.084
	(0.060)	(0.061)	(0.060)	(0.061)	(0.060)	(0.060)	(0.061)	(0.061)
Period 2	-0.306 ***	-0.300 ***	-0.306 ***	-0.297 ***	-0.316 ***	-0.307 ***	-0.317 ***	-0.316 ***
	(0.077)	(0.076)	(0.077)	(0.077)	(0.075)	(0.075)	(0.075)	(0.075)
Controls: size, gravity and capital mobility variables								
Observations	41513	41513	41513	41513	41513	41513	41513	41513
Adjusted R^2	0.721	0.722	0.721	0.723	0.721	0.723	0.714	0.714

Table 6. Robustness: High correlation (Median)

This table is the same as Table 5, but the binary High stock returns' correlation variable is defined relative to the median, rather than to the mean.

	Robustness: higher than median returns' correlation							
	$EMU_{s,h}$		$OLD_{s,h}$		$CORE_{s,h}$		$CORE_sPERIPH_h$	
	(1a)	(1b)	(4a)	(4b)	(1a)	(1b)	(2a)	(2b)
$EMU_{s,h}$	0.729 ***	0.727 ***						
	(0.062)	(0.062)						
$EMU_{s,h}$ _Period 2	-0.219 ***	0.311 *						
	(0.070)	(0.173)						
$EMU_{s,h}$ _H $correl_{s,h}$ _Period 2		-0.553 ***						
		(0.169)						
$OLD_{s,h}$			0.730 ***	0.727 ***				
			(0.062)	(0.062)				
$OLD_{s,h}$ _Period 2			-0.210 ***	0.548 ***				
			(0.070)	(0.136)				
$OLD_{s,h}$ _H $correl_{s,h}$ _Period 2				-0.786 ***				
				(0.131)				
$CORE_{s,h}$					0.650 ***	0.650 ***		
					(0.081)	(0.082)		
$CORE_{s,h}$ _Period 2					-0.157	0.795 ***		
					(0.096)	(0.130)		
$CORE_{s,h}$ _H $correl_{s,h}$ _Period 2						-0.993 ***		
						(0.125)		
$CORE_sPERIPH_h$							0.656 ***	0.656 ***
							(0.093)	(0.093)
$CORE_sPERIPH_h$ _Period2							-0.559 ***	0.208
							(0.108)	(0.336)
$CORE_sPERIPH_h$ _H $correl_{s,h}$ _Period 2								-0.804 **
								(0.332)
H $correl_{s,h}$	0.011	0.031	0.008	0.033	0.029	0.050	0.036	0.041
	(0.054)	(0.055)	(0.054)	(0.055)	(0.054)	(0.054)	(0.055)	(0.055)
Period 2	-0.303 ***	-0.299 ***	-0.303 ***	-0.296 ***	-0.313 ***	-0.305 ***	-0.315 ***	-0.314 ***
	(0.077)	(0.077)	(0.077)	(0.077)	(0.076)	(0.075)	(0.075)	(0.075)
Controls: size, gravity and capital mobility variables								
Observations	41513	41513	41513	41513	41513	41513	41513	41513
Adjusted R^2	0.721	0.722	0.721	0.722	0.721	0.723	0.713	0.713

Table 7. Robustness: alternative offshore centers

This table is the same as Table 5, but the offshore countries are defined according to two alternative definitions: columns (#a) follow the classification in Zoromé (2007), while columns (#b) follow Lane and Milesi-Ferretti (2017) (see Appendix A.1 for details).

	Robustness: alternative offshore centres							
	$EMU_{s,h}$		$OLD_{s,h}$		$CORE_{s,h}$		$CORE_sPERIPH_h$	
	IMF (2007)	L-MF (2017)	IMF (2007)	L-MF (2017)	IMF (2007)	L-MF (2017)	IMF (2007)	L-MF (2017)
	(1a)	(1b)	(4a)	(4b)	(1a)	(1b)	(2a)	(2b)
$EMU_{s,h}$	0.931 ***	0.919 ***						
	(0.064)	(0.068)						
$EMU_{s,h}$ _Period 2	0.383 **	0.371 **						
	(0.156)	(0.164)						
$EMU_{s,h}$ _H $correl_{s,h}$ _Period 2	-0.707 ***	-0.658 ***						
	(0.151)	(0.159)						
$OLD_{s,h}$			0.932 ***	0.919 ***				
			(0.064)	(0.068)				
$OLD_{s,h}$ _Period 2			0.562 ***	0.547 ***				
			(0.132)	(0.139)				
$OLD_{s,h}$ _H $correl_{s,h}$ _Period 2			-0.882 ***	-0.829 ***				
			(0.126)	(0.133)				
$CORE_{s,h}$					0.831 ***	0.762 ***		
					(0.079)	(0.088)		
$CORE_{s,h}$ _Period 2					0.748 ***	0.735 ***		
					(0.133)	(0.128)		
$CORE_{s,h}$ _H $correl_{s,h}$ _Period 2					-1.038 ***	-0.954 ***		
					(0.129)	(0.122)		
$CORE_sPERIPH_h$							0.656 ***	0.785 ***
							(0.096)	(0.099)
$CORE_sPERIPH_h$ _Period2							0.443	0.457
							(0.309)	(0.321)
$CORE_sPERIPH_h$ _H $correl_{s,h}$ _Period 2							-1.059 ***	-1.098 ***
							(0.305)	(0.316)
H $correl_{s,h}$	0.111 *	0.113 *	0.113 *	0.115 *	0.132 **	0.132 **	0.122 *	0.125 *
	(0.065)	(0.066)	(0.065)	(0.066)	(0.064)	(0.065)	(0.065)	(0.066)
Period 2	-0.309 ***	-0.282 ***	-0.305 ***	-0.279 ***	-0.322 ***	-0.296 ***	-0.347 ***	-0.307 ***
	(0.080)	(0.083)	(0.080)	(0.083)	(0.078)	(0.082)	(0.078)	(0.082)
Controls: size, gravity and capital mobility variables								
Observations	37031	35828	37031	35828	37031	35828	37031	35828
Adjusted R^2	0.698	0.700	0.699	0.701	0.701	0.702	0.692	0.692

Table 8. The role of stock returns' correlation controlling for institutions and size

This table reports the results of a Poisson Pseudo Maximum Likelihood regression (Santos Silva and Tenreyro (2006)), with year dummy, individual country pair fixed-effects and standard errors adjusted for two-way clustering at the investing-destination country pair and year levels. The dependent variable is $\log(FPE_{s,h})$, where the subscript s,h represents the couple investing country s-destination country h. Columns (#a) report the results of the interaction of the bilateral EMU_{sh} dummy with two measures of corruption ((1a) to (2b)) and two measures of size ((3a) to (4b)). Columns (#b) consider the additional interaction with the High returns' correlation $(H\ correl_{s,h})$ dummy. As specified at the bottom of the table, all controls of Table 2 are included, but not reported. ***, **, and * indicate significance at the 1, 5, and 10% levels, respectively.

	EMU							
	Control of corruption				Size			
	WGI Index (World Bank)		Perceived Index (Transparency Intl.)		GDP per capita		GDP US$	
	(1a)	(1b)	(2a)	(2b)	(3a)	(3b)	(4a)	(4b)
$EMU_{s,h}$	0.457 ***	0.459 ***	0.366 ***	0.366 ***	-1.152 ***	-1.171 ***	0.379 **	0.348 **
	(0.095)	(0.095)	(0.116)	(0.116)	(0.232)	(0.232)	(0.154)	(0.154)
$EMU_{s,h}$ _H WGI_h	0.121	0.642 ***						
	(0.101)	(0.195)						
$EMU_{s,h}$ _H WGI_h _H $correl_{s,h}$		-0.547 ***						
		(0.168)						
$EMU_{s,h}$ _H Perc $Index_h$			0.213 *	0.766 ***				
			(0.121)	(0.197)				
$EMU_{s,h}$ _H Perc $Index_h$ _H $correl_{s,h}$				-0.577 ***				
				(0.156)				
$EMU_{s,h}$ _H GDP per cap_h					1.752 ***	2.386 ***		
					(0.235)	(0.276)		
$EMU_{s,h}$ _H GDP per cap_h _H $correl_{s,h}$						-0.638 ***		
						(0.150)		
$EMU_{s,h}$ _H GDP_h US$							0.182	0.838 ***
							(0.157)	(0.209)
$EMU_{s,h}$ _H GDP_h US$ _H $correl_{s,h}$								-0.645 ***
								(0.143)
H WGI_h	0.114 *	0.121 *						
	(0.066)	(0.066)						
H Perc $Index_h$			0.110	0.114				
			(0.071)	(0.071)				
H GDP per cap_h					-0.271 ***	-0.297 ***		
					(0.098)	(0.098)		
H GDP_h US$							0.786 ***	0.756 ***
							(0.055)	(0.055)
H $correl_{s,h}$		0.008		0.010 ***		0.023 ***		0.000
		(0.055)		(0.055)		(0.057)		(0.055)
Controls: size, gravity and capital mobility variables								
Observations	45216	41513	45216	41513	45216	41513	45216	41513
Adjusted R^2	0.717	0.719	0.717	0.718	0.711	0.713	0.722	0.723

Table 9. The role of stock returns' correlation controlling for institutions and size (OLD countries)

This table is the same as Table 8, but focuses on OLD countries.

	OLD							
	Control of corruption				Size			
	WGI Index (World Bank)		Perceived Index (Transparency Intl.)		GDP per capita		GDP US$	
	(1a)	(1b)	(2a)	(2b)	(3a)	(3b)	(4a)	(4b)
$OLD_{s,h}$	0.470 ***	0.473 ***	0.454 ***	0.459 ***	0.456 ***	0.467 ***	0.479 ***	0.444 ***
	(0.056)	(0.056)	(0.057)	(0.057)	(0.061)	(0.062)	(0.135)	(0.058)
$OLD_{s,h}$ _H WGI_h	0.195 ***	0.408 ***						
	(0.050)	(0.156)						
$OLD_{s,h}$ _H WGI_h _H $correl_{s,h}$		-0.227						
		(0.160)						
$OLD_{s,h}$ _H $Perc\ Index_h$			0.205 ***	0.422 ***				
			(0.050)	(0.152)				
$OLD_{s,h}$ _H $Perc\ Index_h$ _H $correl_{s,h}$				-0.231				
				(0.157)				
$OLD_{s,h}$ _H $GDP\ per\ cap_h$					0.222 ***	0.493 ***		
					(0.052)	(0.151)		
$OLD_{s,h}$ _H $GDP\ per\ cap_h$ _H $correl_{s,h}$						-0.292 *		
						(0.157)		
$OLD_{s,h}$ _H GDP_h US$							0.085	0.300 **
							(0.137)	(0.117)
$OLD_{s,h}$ _HGDP_h US$ _H $correl_{s,h}$								-0.091
								(0.123)
H WGI_h	0.079	0.085						
	(0.060)	(0.060)						
H $Perc\ Index_h$			0.092	0.095				
			(0.065)	(0.065)				
H $GDP\ per\ cap_h$					-0.260 ***	-0.289 ***		
					(0.097)	(0.098)		
H GDP_h US$							0.793 ***	0.729 ***
							(0.055)	(0.054)
H $correl_{s,h}$		0.005		0.004 ***		0.025 ***		-0.024
		(0.057)		(0.057)		(0.058)		(0.060)
Controls: size, gravity and capital mobility variables								
Observations	45216	41513	45216	41513	45216	41513	45216	41513
Adjusted R^2	0.721	0.722	0.721	0.722	0.716	0.716	0.722	0.726

Table 10. The role of stock returns' correlation controlling for institutions and size (CORE countries)

This table is the same as Table 8, but focuses on $CORE$ countries.

	CORE							
	Control of corruption				Size			
	WGI Index (World Bank)		Perceived Index (Transparency Intl.)		GDP per capita		GDP US$	
	(1a)	(1b)	(2a)	(2b)	(3a)	(3b)	(4a)	(4b)
$CORE_{s,h}$	0.338 ***	0.345 ***	0.328 ***	0.337 ***	0.346 ***	0.356 ***	0.345 ***	0.354 ***
	(0.075)	(0.075)	(0.074)	(0.074)	(0.073)	(0.073)	(0.070)	(0.071)
$CORE_{s,h}$ _H WGI_h	0.256 ***	0.713 ***						
	(0.054)	(0.194)						
$CORE_{s,h}$ _H WGI_h _H $correl_{s,h}$		-0.482 **						
		(0.198)						
$CORE_{s,h}$ _H Perc $Index_h$			0.271 ***	0.724 ***				
			(0.053)	(0.188)				
$CORE_{s,h}$ _H Perc $Index_h$ _H $correl_{s,h}$				-0.479 **				
				(0.192)				
$CORE_{s,h}$ _H GDP per cap_h					0.287 ***	0.775 ***		
					(0.052)	(0.187)		
$CORE_{s,h}$ _H GDP per cap_h _H $correl_{s,h}$						-0.516 ***		
						(0.191)		
$CORE_{s,h}$ _H GDP_h US$							0.284 ***	0.478 ***
							(0.048)	(0.134)
$CORE_{s,h}$ _H GDP_h US$ _H $correl_{s,h}$								-0.210
								(0.140)
H WGI_h	0.052	0.055						
	(0.061)	(0.061)						
H Perc $Index_h$			0.079	0.077				
			(0.066)	(0.066)				
H GDP per cap_h					-0.173 *	-0.207 **		
					(0.096)	(0.096)		
H GDP_h US$							0.765 ***	0.735 ***
							(0.053)	(0.053)
H $correl_{s,h}$		0.037		0.035 ***		0.048 ***		0.004
		(0.057)		(0.057)		(0.058)		(0.059)
Controls: size, gravity and capital mobility variables								
Observations	45216	41513	45216	41513	45216	41513	45216	41513
Adjusted R^2	0.717	0.718	0.718	0.718	0.714	0.714	0.723	0.723

A Data appendix

I. Dependent variable

Foreign Portfolio Equities: Cross-border holdings of equities issued by host country residents and held by the source country residents. Source: Coordinated Portfolio Investment Survey (IMF).

Investing and destination countries

Argentina, Australia, Austria, Bahrain, Barbados, Belgium, Brazil, Bulgaria, Canada, Chile, China Hong Kong, China, Colombia, Costa Rica, Cyprus, Czech Republic, Denmark, Egypt, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, Japan, Kazakhstan, Korea, Kuwait, Latvia, Lebanon, Lithuania, Luxembourg, Malaysia, Malta, Mauritius, Mexico, Mongolia, Netherlands, New Zealand, Norway, Pakistan, Panama, Philippines, Poland, Portugal, Romania, Russia, Saudi Arabia, Singapore, Slovak Republic, Slovenia, South Africa, Spain, Sweden, Switzerland, Thailand, Turkey, Ukraine, United Kingdom, United States, Uruguay, Venezuela.

Offshore centres

Note that, as exception to the list above, the below mentioned countries are considered as investing, but not as destination economies.

Baseline specification: the Netherlands, Luxembourg, Hong Kong SAR, Ireland, and Singapore (Damgaard et al. (2018)).

Robustness, Table 7, columns #a): Bahrain, Hong Kong, Cyprus, Ireland, Luxembourg, Malta, Mauritius, the Netherlands, Panama, Singapore, Switzerland, Belgium, United Kingdom (Lane and Milesi-Ferretti (2017))

Robustness, Table 7, columns #b): Bahrain, Barbados, Hong Kong, Cyprus, Ireland, Luxembourg, Malta, Mauritius, Panama, Singapore, Switzerland, United Kingdom, Latvia, Uruguay (Zoromé (2007))

A.1 II. Stock returns' correlation

The correlation between the stock market returns of the host and source country, expressed in US dollars, is computed as the lagged correlation of monthly returns in the previous year.

Source: Monthly Monetary and Financial Statistics (MEI), OECD

III. Size variables

GDP per capita: Gross domestic product divided by midyear population (in current U.S.$). Source: World Development Indicators, World Bank.

GDP in US$: Gross Domestic Product, Current U.S. Dollars, Annual, Not Seasonally Adjusted. Federal Reserve Economic Data (FRED).

IV. Gravity variables

Distance: Measure of the distance between the capital of the source and the host country, estimated with the great circle distance in miles. Source: CEPII's distance measures, the GeoDist database.

Border dummy: Dummy variable that takes the value equal to 1 when a pair of countries have at least one border in common, and 0 otherwise. Source: CEPII's distance measures, the GeoDist database.

Colonial dummy: Dummy variable that takes the value equal to 1 for those pair of countries that share a common colonial past, and 0 otherwise. Source: CEPII's distance measures, the GeoDist database.

Language dummy: Dummy variable that takes the value equal to 1 when a pair of countries have an official language in common, and 0 otherwise. Source: CEPII's distance measures, the GeoDist database.

Legal origins dummy: Dummy variable that takes the value equal to 1 for those pair of countries that share a common origin (British, French, Socialist, German or Scandinavian).

V. Capital mobility

Capital mobility: Rank from 1 to 10, denoting increasing capital mobility, for both the source and the host country. Source: Economic Freedom of the World.

VI. Institutional variables

Control of Corruption: Percentile Rank of control of corruption in the host country. Control of corruption captures perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests. Source: Worldwide Governance Indicators (World Bank)

Perceived Corruption Index. The index scores and ranks countries and territories around the world on the perceived level of corruption in the public sector. It is an aggregate index which scores 1-100 from very clean to highly corrupted countries and which draws on a number of different data sources that capture business and expert views across different countries. Source: Transparency International (https://www.transparency.org/en/cpi)